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RELIABILITY AND SENSITIVITY OF THE 20-METER WALK TEST AMONG PATIENTS WITH KNEE OSTEOARTHRITIS

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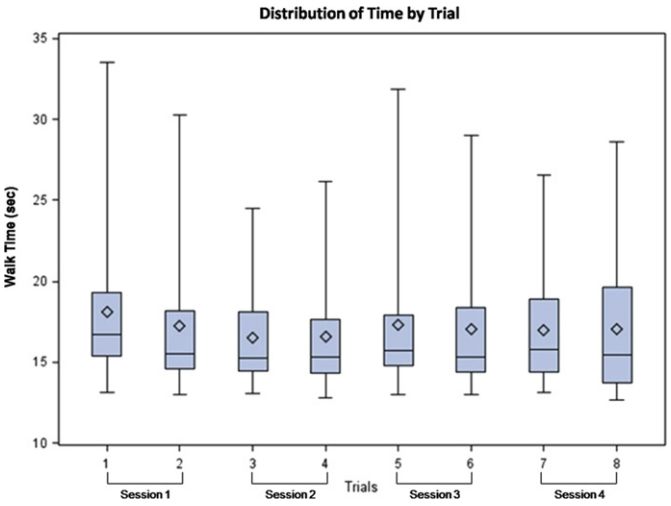
Purpose: The 20-meter walk test is a physical function measure commonly used in clinical research studies and rehabilitation clinics to measure gait speed and monitor changes in patients' physical function over time. Unfortunately, the reliability and sensitivity of this walk test are not well defined and therefore limit our ability to evaluate changes in gait speed. The aim of this study was to assess the reliability and sensitivity of the 20-meter walk test, at a self-selected pace, among patients with knee osteoarthritis (OA).
Methods: This was a measurement reliability study that included fifteen consecutive participants enrolled in a randomized-controlled trial of intra-articular corticosteroid injections for knee OA. The study sample included consecutive participants attending screening (Day 1) and baseline (Day 2) visits between July 2011 and December 2011. All participants met the American College of Rheumatology criteria for OA; had radiographic knee OA, as defined by Kellgren-Lawrence grade 2 or 3; and knee synovitis, defined by a synovial pouch depth greater than 2.0 mm measured by ultrasound. All participants were also required to have knee pain symptoms, defined as a WOMAC Osteoarthritis Index (version 3.1, 5-point Likert) pain subscore ≥ 2 at the beginning of their first visit (Day 1). All participants completed 4 trials on 2 separate days, 7 to 21 days apart (8 trials total). Each day was divided into 2 sessions, which each involved 2 walking trials. Day 1 contained sessions 1 (trial 1 and 2) and session 2 (trial 3 and 4) and Day 2 contained session 3 (trial 5 and 6) and session 4 (trial 7 and 8). All trials were administered by the same investigator following a standardized script and protocol. We compared walk times between trials with Wilcoxon signed-rank tests. We also calculated Spearman correlation coefficients to assess the relationship between sessions. Finally, smallest detectable differences (SDD) were calculated to estimate the sensitivity of the 20-meter walk test.
Results: Participants were 53% female, 67% (n = 10) Caucasian, on average 61.0 ± 7.8 years of age and had a mean body mass index of 28.9 ± 5.4 kg/m^2. Twelve participants (80%) had Kellegren-Lawrence Grade = 3. WOMAC pain scores were 5.3 ± 1.3 on Day 1 and 4.9 ± 2.0 on Day 2. The figure depicts walk times across trials. We found that walking times in the first session were slower than the second session (median difference = 0.53 seconds, -0.04 m/s; Table). We also found that the correlation between session 1 and sessions 3 and 4 were lower than the correlations between session 2 and sessions 3 and 4 (Table). Therefore, we considered the first session of each day a practice session and calculated the SDD between the second session of each day (session 2 and 4). SDD were -2.59 seconds (walking slower) and 1.65 seconds (walking faster). There was a potential systematic bias of participants walking slower during the second session on Day 2 compared to the second session of Day 1 (10 [67%] participants walked slower in session 4 compared to session 2; based on differences below zero).
Conclusions: We found that the average of the first two 20-meter walk times did not agree with subsequent average walk times among participants with knee OA. Therefore, practice trials may be advised prior to a measuring a participants walk time. Despite concerns about the walk times of session 1, the following sessions were reliable and had good agreement. Finally, changes in walk time between -2.59 seconds (walking slower) and 1.65 seconds (walking faster) should be considered within the range of normal variability of 20-meter walking speed.

Table 1
Between-Session Comparisons and Associations

Comparison	Median Difference (sec)	p value	Range of Agreement	Spearman Correlation
			Min, Max (sec)	(95% CI)
Session 1 - Session2	0.53	**< 0.01**	-2.54, 4.81	0.88 (0.67, 0.96)
Session 1 - Session 3	0.31	0.22	-2.13, 3.09	0.78 (0.45, 0.92)
Session 1 - Session 4	0.12	0.28	-3.07, 4.39	0.78 (0.45, 0.92)
Session 2 - Session 3	-0.14	0.07	-3.49, 2.20	0.95 (0.85, 0.98)
Session 2 - Session 4	-0.04	0.19	-2.63, 1.69	0.94 (0.83, 0.98)

Note. P values are based on Wilcoxon signed-rank tests. 95% CI = 95% confidence interval.



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MORTALITY IN OSTEOARTHRITIS: A SYSTEMATIC REVIEW

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Purpose: Study results concerning mortality in osteoarthritis (OA) patients have been controversial. We conducted a systematic review to determine the true association between OA and mortality.
Methods: A systematic search was performed in the databases MEDLINE, EMBASE, COCHRANE, Web of Science, ScienceDirect, CINAHL and Academic Search Premier up to October 2011. Two independent reviewers identified studies that reported mortality for OA patients, compared with a non-OA population. Study quality was also assessed Information on study design, patient characteristics, OA status, duration of follow-up, mortality assessment and outcomes were extracted for each study.
Results: The electronic databases yielded 1598 individual articles of which 1387 articles were excluded on the basis of title and 116 articles on the basis of abstracts. Ninety-five articles were screened full-text and only 27 articles met the inclusion criteria. Five articles were additionally excluded due to multiple publications for the same population, the lack of OA specific information or short follow-up time. Finally, 22 studies, investigating 23 patient populations, were included in the present review. Most studies involved knee or hip OA (n=17). Comparisons were mostly made with the general population using information from the country's bureau of statistics. The quality of these studies varied widely. Thirteen studies reported mortality in 14 study populations, receiving either total knee or hip arthroplasty; the majority of these studies found lower mortality rates for OA patients. Four studies, generally of low quality, of which three hospital based found increased mortality rates, whereas one study, in OA patients consulting their general practitioners, did not. Five studies were based in the general population; two high quality studies reported higher mortality rates, while the other studies (of a varying quality) reported lower and equal mortality rates for OA cases.
Conclusion: The heterogeneous quality of the studies has unfortunately resulted in important limitations to our interpretation of the evidence. The association between OA and mortality appears to be complex, depending on the phenotype. Factors, such as selection bias, care seeking behavior, OA subtype, etc could account for the observed differences. Further studies are warranted.

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TRABECULAR BONE TEXTURE DETECTED BY PLAIN RADIOGRAPHY IS ASSOCIATED WITH AN INCREASED RISK FOR KNEE REPLACEMENT IN PEOPLE WITH OSTEOARTHRITIS: A SIX YEAR PROSPECTIVE FOLLOW UP STUDY

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